

AD-A172 020

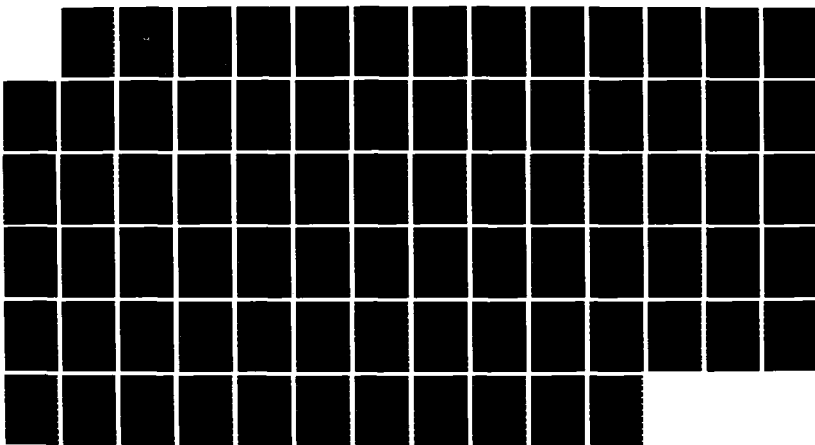
LIFE CYCLE COST MODEL FOR MOBILE ELECTRIC POWER
APPENDIX A(U) SCIENCE APPLICATIONS INTERNATIONAL CORP
MCLEAN VA V YOUNG ET AL. 29 AUG 86 DAAK70-84-D-0053

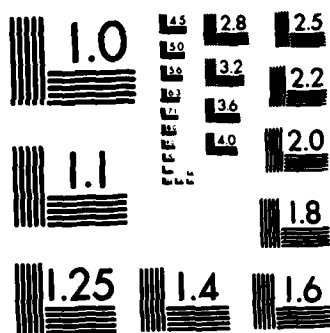
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MICROCOPY RESOLUTION TEST CHART

AD-A172 020

1

FINAL REPORT
LIFE CYCLE COST MODEL FOR
MOBILE ELECTRIC POWER
APPENDIX A

29 AUGUST 1986

SAIC
Science Applications International Corporation

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SEP 17 1986

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FINAL REPORT
LIFE CYCLE COST MODEL FOR
MOBILE ELECTRIC POWER
APPENDIX A

29 AUGUST 1986

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Prepared for the
Belvoir Research Development and Engineering Center

Under
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Task Order Number 0020

"The views, opinions and/or findings contained in this report are those of the authors and should not be construed as an official Department of the Army position, policy, or decision unless so designated by other documentation."

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
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DISTRIBUTION STATEMENT A

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ELECTE
SEP 17 1986

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VARIABLE INPUT SHEET

1.011 ENGINEERING

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

CONTRACT: THRUPUT -
 MANYEARS -
 MANYEAR \$ -
 TRAVEL \$ -
 MATERIAL \$ -
 MATERIAL TRANS COST -
 TEST EQUIP \$ -
TEST EQUIP TRANS COST -
 REDESIGN % -
IN HOUSE: MANYEARS -
 MANYEAR \$ -
 TRAVEL \$ -
 OTHER -

YEARLY % BREAKDOWN

1986
1987
1988
1989
1990
1991

EQUATION:

= CONTRACT (INITIAL ((MANYRS*MANYRSS\$+TRAVEL)
*(1+REDESIGN%)+(MATERIAL\$+TRANS\$)+(TEST EQUIP
+TRANS\$)) +IN HOUSE (MANYRS*MANYRS\$+TRAVEL)+OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

Adm	✓
MC	
Dist	
A-1	
Dist	
A-1	

VARIABLE INPUT SHEET

1.012 PROD ENG & PLANNING

VARIABLES

-----	SUBSYSTEM (1)	SUBSYSTEM (2)	SUBSYSTEM (3)
CONTRACT:	THRUPUT -		
	#DRAWINGS -		
	\$PER DRAWING -		
	MANYEARS -		
	MANYEAR \$ -		
IN HOUSE:			
	#DRAWINGS -		
	\$PER DRAWING -		
	MANYEARS -		
	MANYEAR \$ -		
	OTHER -		
YEARLY % BREAKDOWN			
	1986		
	1987		
	1988		
	1989		
	1990		
	1991		

EQUATION:

= CONTRACT (#DRAWINGS*DRAWING\$\$+MANYRS*MANYR\$)
+ IN HOUSE (#DRAWINGS*DRAWING\$\$+MANYRS*MANYR\$)
+ OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.013 TOOLING

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

CONTRACT: THRUPUT =
 HOURS =
 HOURLY RATE =
 MATERIAL \$ =
 TRANSPORTATION \$ =
 OTHER =

YEARLY % BREAKDOWN

1986
1987
1988
1989
1990
1991

EQUATION:

=CONTRACT (MATERIAL\$ + TRANSP\$ + HOURS * HOURLY RATE)
+OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.014 PROTOTYPE MANUFACTURING

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -
MANUFACTURING \$ -
SPARES (% OF MANUF) -
REWORK (% OF MANUF) -
PROTOTYPES -
GFE -
OTHER -

YEARLY % BREAKDOWN

1986
1987
1988
1989
1990
1991

EQUATION:

= (MANUF\$ + SPARES% * MANUF\$ + REWORK% * MANUF\$)
* #PROTOTYPES+ GFE + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.02 DATA

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

CONTRACT: THRUPUT =
 MANYEARS =
 MANYEAR \$ =
 TRAVEL \$ =
 MATERIAL \$ =
IN HOUSE: MANYEARS =
 MANYEAR \$ =
 TRAVEL \$ =
 OTHER =

YEARLY % BREAKDOWN

1986
1987
1988
1989
1990
1991

EQUATION:

= CONTRACT (MANYRS*MANYR\$) + (TRAVEL\$) + MATERIAL\$
+ IN HOUSE (MANYRS*MANYR\$) + (TRAVEL\$) + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.03 SYSTEM TEST & EVAL

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

CONTRACT: THRUPUT =
 MANYEARS =
 MANYEAR \$ =
 MATERIAL \$ =
IN HOUSE: MANYEARS =
 MANYEAR \$ =
 TRAVEL \$ =
 MATERIAL \$ =
 DTI \$ =
 DTII \$ =
 OTI \$ =
 OTII \$ =
 OTHER =

YEARLY % BREAKDOWN:

1986
1987
1988
1989
1990
1991

EQUATION:

= CONTRACT (MANYRS*MANYR\$) + MATERIAL\$ +
IN HOUSE (MANYRS*MANYR\$) + (TRAVEL\$) + MATERIAL\$
+ DTI\$ + DTII\$ + OTI\$ + OTII\$ + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.04 SYSTEM PROG MGMT

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -

MANYEARS -

MANYEAR \$ -

OTHER -

YEARLY % BREAKDOWN:

1986

1987

1988

1989

1990

1991

EQUATION:

= (MANYRS * MANYR\$) + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.05 TRAIN SERVICE & EQ

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

CONTRACT: THRUPUT =
 MANYEARS =
 MANYEAR \$ =
 TRAVEL \$ =

IN HOUSE:
MANYEARS PREPERATION =
 MANYEAR \$ =
MANYEAR PARTICIPATION =
 MANYEAR \$ =
 TRAVEL \$ =
 MATERIAL \$ =
 OTHER =

YEARLY % BREAKDOWN:

1986
1987
1988
1989
1990
1991

EQUATION:

= CONTRACT (MANYRS * MANYR\$) + TRAVEL\$ +
IN HOUSE (MANYRS * MANYR\$ FOR PREPARATION) +
(MANYRS * MANYR\$ FOR PARTICIPATION + TRAVEL\$)
+ MATERIAL\$ + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.06 FACILITIES

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

YEARLY % BREAKDOWN:

1986
1987
1988
1989
1990
1991

EQUATION:
1.06 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.07 OTHER RDT&E DEV

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

YEARLY % BREAKDOWN:

1986
1987
1988
1989
1990
1991

EQUATION:
1.07 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.011 ENGINEERING (SUNK COSTS)

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.012 PROD ENG & PLANNING (SUNK COSTS)

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.013 TOOLING (SUNK COSTS)

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.014 PROTOTYPE MANUFACTURING (SUNK COSTS)

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.02 DATA (SUNK COSTS)

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.03 SYSTEM TEST & EVAL (SUNK COSTS)

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.04 SYSTEM PROG MGMT (SUNK COSTS)

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.05 TRAIN SERVICE & EQ (SUNK COSTS)

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.06 FACILITIES (SUNK COSTS)

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

1.07 OTHER RDT&E DEV (SUNK COSTS)

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

PRODUCTION CALCULATION AND SCHEDULE INPUT

PRODUCTION SCHEDULE INPUT

Distribution	# of systems	usage rate	B x C
CONUS			
Active			0
Reserve		0.25	0
Training			0
Europe			0
Korea			0
Pacific			0
Alaska			0
South			0
-----Sum =	0	Weighted Sum =	0
Ready rate =		Max prod. # =	
MCTTR =		Min prod. # =	
MTBF =	1	Backorder # =	
MCTTO =			
MTBO =	1	Year 1 prod. =	
Ann. operating time =		Year 2 prod. =	
Useful system life =	1	Year 3 prod. =	
# of operating years =	1	Year 4 prod. =	
Initial prod years =		Year 5 prod. =	
Total prod years =			

PRODUCTION CALCULATION AND SCHEDULE EXAMPLE

PRODUCTION SCHEDULE CALCULATION

Repair float	0
Operational float	0
Total float	0
Annual wearout number	0
Total wearout number	0
Replacement number	0
TOTAL Production	0

YEAR	Yearly prod.	Cum prod.	Remain prod.
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0

RESULTS OF CALCULATION

Total Production Quantity =	0
Annual Wearout =	0

Spread over			
production years--1	0	11	0
2	0	12	0
3	0	13	0
4	0	14	0
5	0	15	0
6	0	16	0
7	0	17	0
8	0	18	0
9	0	19	0
10	0	20	0

VARIABLE INPUT SHEET

2.011 INITIAL PROD FACILITY

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -
MATERIAL \$ -
MANYEARS -
MANYEAR \$ -
OTHER -

EQUATION:
= MANYEARS * MANYEAR\$ + MATERIAL\$ + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.012 PROD BASE SUPPORT

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATIONS:
2.012 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.013 DEPOT MAINT PROD EQUIP

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATION:
2.013 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.014 OTHER NON REC PROD

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATION:

2.014 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.021 MANUFACTURING

VARIABLES

-----	SUBSYSTEM (1)	SUBSYSTEM (2)	SUBSYSTEM (3)
THRUPUT =			
FIRST UNIT COST =			
QUANTITY PRODUCED =	1.0	1.0	1.0
LEARN CURVE FACTOR =	1.0	1.0	1.0
MATERIAL\$ PER UNIT =			
OVERHEAD % =			
G&A % =			
PROFIT % =			
GFE =			
OTHER =			

EQUATION:

$$= ((\text{FIRST UNIT\$ OF LABOR}/(1+B)*\text{QUANTITY}*\text{QUANTITY}^{(B)}) + \text{QUANTITY} * \text{MATERIAL\$ PER UNIT}) * \text{OH} * \text{G\&A} * \text{PROFIT} + \text{GFE} + \text{OTHER}$$

$$(B = \text{LOG}_{10} (\text{LEARNING CURVE FACTOR})/\text{LOG}_{10} 2)$$

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.022 RECURRING ENG

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

CONTRACT: THRUPUT =
 MANYEARS =
 MANYEAR \$ =
IN HOUSE: MANYEARS =
 MANYEAR \$ =
COMMON: OTHER =

EQUATION:

= CONTRACT (MANYEARS * MANYEAR\$)
+ IN-HOUSE (MANYEARS * MANYEAR\$)
+ OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.023 SUSTAINING TOOLING

VARIABLES

-----	SUBSYSTEM (1)	SUBSYSTEM (2)	SUBSYSTEM (3)
CONTRACT:			
THRUPUT -			
INITIAL TOOL % -			
IN HOUSE:			
MANYEARS -			
MANYEAR \$ -			
COMMON:			
OTHER -			

EQUATION:

- CONTRACT (% INITIAL TOOLING * INITIAL TOOLING)
+ IN-HOUSE (MANYEARS * MANYEARS\$)
+ OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.024 QUALITY CONTROL

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

CONTRACT: THRUPUT =
 MANYEARS =
 MANYEAR \$ =
IN HOUSE: MANYEARS =
 MANYEAR \$ =
 FAT =
COMMON: OTHER =

EQUATION:

= CONTRACT (MANYRS * MANYR\$)
+ IN-HOUSE (MANYRS * MANYR\$)
+ FAT + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.03 ENGINEERING CHANGES

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

CONTRACT: THRUPUT =
 % OF MANUFAC =
IN HOUSE: MANYEARS =
 MANYEAR \$ =
COMMON: OTHER =

EQUATION:
= CONTRACT (% OF MANUFACTURING * MANUFACTURING)
+ IN-HOUSE (MANYRS * MANYR \$)
+ OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.04 DATA

VARIABLES

	SUBSYSTEM (1)	SUBSYSTEM (2)	SUBSYSTEM (3)
CONTRACT:			
THRUPUT =			
MANYEARS =			
MANYEAR \$ =			
IN HOUSE:			
MANYEARS =			
MANYEAR \$ =			
COMMON:			
#PAGES =			
COST/PAGE =			
OTHER =			

EQUATIONS:

= CONTRACT (MANYRS*MANYR\$)
+ IN-HOUSE (MANYRS*MANYR\$)
+ (# PAGES * COST/PAGE) + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.05 SYSTEM TEST & EVALUATION

VARIABLES

-----	SUBSYSTEM (1)	SUBSYSTEM (2)	SUBSYSTEM (3)
CONTRACT:	THRUPUT =		
	MANYEARS =		
	MANYEAR \$ =		
	TRAVEL =		
IN HOUSE:			
	MANYEARS =		
	MANYEAR \$ =		
	TRAVEL =		
	MATERIAL \$ =		
COST TO CONDUCT TEST	=		
COMMON:			
	OTHER =		

SPREAD OVER PRODUCTION YEARS

-----	-----
1986	1996
1987	1997
1988	1998
1989	1999
1990	2000
1991	2001
1992	2002
1993	2003
1994	2004
1995	2005

EQUATION:

= CONTRACT (MANYRS * MANYR\$ + TRAVEL)
+ IN-HOUSE (MANYRS * MANYR\$ + TRAVEL)
+ MATERIAL\$ + TEST CONDUCTIONS\$ + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.06 TRAINING SERVICE & EQUIPMENT

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

MANYEARS FOR PREP =

MANYEAR \$ =

COST OF CLASS =

#CLASSES =

MANYRS FOR CLASS ATT =

MANYEAR \$ =

TRAVEL \$ =

MATERIAL \$ =

OTHER =

EQUATIONS:

= (MANYRS * MANYR\$ CLASS PREP)+(CLASS\$ * #CLASSES)

+ (MANYR CLASS ATTENDANCE * MANYR\$)+MATERIAL\$

+ TRAVEL\$ + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.07 INITIAL SPARES

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

% UNIT MANUF =
AAO QUANTITY =
OTHER =

EQUATION:

= AAO QUANTITY * (% UNIT MANUF * UNIT MANUF COST)

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.08 OPERATIONAL SITE ACTIVITY

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATION:
2.08 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

2.09 OTHER PROC FUNDED PRODUCTION

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATION:
2.09 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

3.01 TEST CONSTRUCTION

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

YEARLY % BREAKDOWN

1986
1987
1988
1989
1990
1991

EQUATION:
3.01 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

3.02 PRODUCTION CONSTRUCTION

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

YEARLY % BREAKDOWN

1986
1987
1988
1989
1990
1991

EQUATION:
3.02 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

3.03 OPER/SITE ACT CONSTRUCTION

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

YEARLY % BREAKDOWN

1986
1987
1988
1989
1990
1991

EQUATION:
3.03 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

3.04 OTHER MCA FUNDED CONSTRUCTION

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

YEARLY % BREAKDOWN

1986
1987
1988
1989
1990
1991

EQUATION:
3.04 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

4.01 SYSTEM TEST & EVALUATION

VARIABLES

----- SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

CONTRACT THRUPUT -

 MANYEARS -

 MANYEAR \$ -

 MATERIAL \$ -

IN HOUSE

 MANYEARS -

 MANYEAR \$ -

 TRAVEL \$ -

 MATERIAL \$ -

 DTI \$ -

 DTII \$ -

 OTI \$ -

 OTII \$ -

 OTHER -

YEARLY % BREAKDOWN

 1986

 1987

 1988

 1989

 1990

 1991

EQUATION:

= CONTRACT ((MANYEARS*MANYEARS\$)+MATERIAL\$)

+ IN-HOUSE ((MANYEARS*MANYEARS\$)+TRAVEL\$)+MATERIAL\$

+DTI\$+DTII\$+OTI\$+OTII\$+OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

4.02 TRAINING SERVICE & EQUIPMENT

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -

MANYRS FOR PREP -
MANYEAR \$ -
COST OF CLASS -
#CLASSES -
MANYRS FOR ATTENDANCE -
MANYEAR \$ -
MATERIAL \$ -
TRAVEL \$ -
OTHER -

YEARLY % BREAKDOWN:

1986
1987
1988
1989
1990
1991

EQUATION:

= (MANYEAR\$ * MANYRS FOR PREP) + (COST OF CLASS
* #CLASSES) + (MANYEAR\$ * MANYRS FOR ATTENDANCE)
+ MATERIAL\$ + TRAVEL\$ + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

4.03 TRANSPORTATION

TO CALCULATE 2nd DEST COST; INPUT #UNITS AND COST\UNIT FOR EACH THEATER

THEATER	#UNITS	COST\UNIT	#UNITS * COST
CONUS			0.0
EUROPE			0.0
KOREA			0.0
PACIFIC			0.0
ALASKA			0.0
SOUTH			0.0
COST 2nd DEST =			0.0

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =
 WEIGHT OF SYS =
 1st DESTINATION COST =
 # SYSTEMS =
 SUM 2nd DEST COST =
 OTHER =

YEARLY % BREAKDOWN:

1986
 1987
 1988
 1989
 1990
 1991

EQUATION:

= WEIGHT * 1.1 (PACKING FACTOR) * (1st DEST COST
 * # SYSTEMS) + WEIGHTED SUM OF 2nd DEST COST
 + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

4.04 INITIAL REPAIR PARTS

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -

%UNIT MAN FOR REP PARTS -

UNIT MANUFAC COST -

AAO QUANTITY -

OTHER -

YEARLY % BREAKDOWN:

1986

1987

1988

1989

1990

1991

EQUATION:

= (%UNIT MAN COST FOR REP PARTS * UNIT MANUFAC COST)
* AAO QUANTITY + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

4.05 SYSTEM SPECIFIC BASE OP SUPPORT

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

YEARLY % BREAKDOWN:

1986

1987

1988

1989

1990

1991

EQUATION:

4.05 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

4.06 OTHER O&M FUND FIELD

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

YEARLY % BREAKDOWN:

1986
1987
1988
1989
1990
1991

EQUATION:

4.06 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

WEIGHTED SMS TABLE

MASTER SYS DISTRIBUTION	USAGE RATES	# UNITS	BASE PAY & THEATER COST	ATTRITION	TRAINING			MFA	ROTATION	PCS	2ND TRANS	QJ
					OMA	OPA	MFA					
CONUS												
TRAINING												
ACTIVE												
RESERVES	0.25											
EUROPE												
KOREA												
PACIFIC												
ALASKA												
SOUTH COMAND												
WEIGHTED SUM		0	0		0	0	0	0		0	0	0

COMMON VARIABLES

TABLE OF COMMON VARIABLES

-----	SUBSYSTEM (1)	MASTER SYS SUBSYSTEM (2)	SUBSYSTEM (3)
WEIGHTED # OF UNITS -			
ANNUAL OP HRS -			
MAINT MANYRS/SYS -			
or			
MTBF -	1	1	1
MTTR -			
MTBSM -	1	1	1
MTTSM -			
MTBO -	1	1	1
MTTO -	1	1	1
ANNL MAINT HRS AVAIL -			
CREW MANYEARS/SYS -			
# OP YRS -			
UNIT MANUF \$ -			
MCTTR -			
MCTTO -			
USEFUL SYS LIFETIME -	1	1	1
# UNITS IN TRAINING -			

VARIABLE INPUT SHEET

5.011 REPL REPAIR PARTS (OM)

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -

% UNIT MANUF \$ -

OTHER -

EQUATION:

= WEIGHTED # UNITS * % UNIT MANUF \$

* UNIT MANUF \$ * # OPERATING YRS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.012 REPL SPARES (PROC)

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

% UNIT MANUF \$ =

OTHER =

EQUATION:

= WEIGHTED # UNITS * % UNIT MANUF \$

* UNIT MANUF \$ * # OPERATING YRS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.013 WAR RES REPAIR PARTS (OM)

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

REP PARTS PER SYSTEM =

AVG REPAIR PART \$ =

UNITS IN WAR RES =

OTHER =

EQUATION:

= (# REPAIR PARTS PER SYSTEM * AVG REPAIR PART \$)

* # UNITS IN WAR RES + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.014 WAR RES SPARES (PROC)

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

SPARES PER SYSTEM =

AVG SPARES \$ =

UNITS IN WAR RES =

OTHER =

EQUATION:

= (# SPARES PER SYSTEM * AVG SPARES \$)

* # UNITS IN WAR RES + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.02 PETR, OIL, & LUBE

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -

ANNUAL HRS OR MILES -

RATE OF FUEL CONSUMP -

FUEL COST -

LUBE FACTOR -

OTHER -

EQUATION:

= ANNUAL HRS OR MILES * RATE OF FUEL CONSUMPTION

* FUEL COST * LUBE FACTOR

* WEIGHTED # UNITS * # OPERATING YRS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.031 TRAINING AMMO/MISL

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

AVG AN CONSP PER SYS =

AVG AMMO COST =

UNITS IN TRAINING =

OTHER =

EQUATION:

= AVG ANNUAL CONSUMPTION PER SYS * AVG AMMO COST

* # UNITS IN TRAINING * # OPERATING YRS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.032 WAR RES AMMO/MISL

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

WAR RES CONSUMP =

UNIT AMMO COST =

WAR RES UNITS =

OTHER =

EQUATION:

= WAR RES CONSUMP * UNIT AMMO COST

* # WAR RES UNITS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.041 CIVILIAN LABOR

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

CIV LABOR RATE \$ =

OTHER =

EQUATION:

= (MTTO * CIV LABOR RATE\$ * ANNUAL OPERATING HRS
/ MTBO) * WEIGHTED # UNITS * # OPERATING YRS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.042 MATERIEL (OM)

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

% UNIT MANUF \$ =

OTHER =

EQUATION:

= % UNIT MANUF \$ * UNIT MANUF \$

* ((ANNUAL OPERATING HRS / MTBO)

* WEIGHTED # UNITS * # OPERATING YRS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.043 MATERIEL (PROC)

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

% UNIT MANUF \$ =

OTHER =

EQUATION:

= % UNIT MANUF \$ * UNIT MANUF \$

* ((ANNUAL OPERATING HRS / MTBO)

* WEIGHTED # UNITS * # OPERATING YRS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.044 MAINT SUPPORT ACTIV

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATION:
5.044 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.05 FIELD MAINT CIV LAB

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

CIV LABOR RATE\$ PER HR =

CIV LABOR MTTR =

CIV LABOR MTSM =

MTBF =

MTBSM =

OTHER =

1.0

1.0

1.0

1.0

1.0

1.0

EQUATION:

= ((CIV LABOR MTTR * ANNUAL OPERATING HRS / MTBF)
 + (CIV LABOR MTSM * ANNUAL OPERATING HRS) / MTBSM)
 * CIV LABOR RATE\$ PER HR * WEIGHTED # UNITS
 * # OPERATING YRS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.06 TRANSPORTATION

VARIABLES

	SUBSYSTEM (1)	SUBSYSTEM (2)	SUBSYSTEM (3)
THRUPUT =			
WEIGHTED SUM TRANSP \$ =			
WEIGHT OF SYSTEM =			
OTHER =			

EQUATION:

= (WEIGHTED SUM TRANSP \$ * WEIGHT OF SYSTEM * 2
* 1.1 (PF) * ((ANNUAL OPERATING HRS / MTBO)
* WEIGHTED # UNITS * # OPERATING YRS
+ OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.071 AMMO/MISL/EQUIP

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT -

WEIGHT SUM OF REPLACE \$ -

OTHER -

EQUATION:

= ((MTTR * ANNUAL OPERATING HRS / MTBF
/ ANNUAL MAINT HRS AVAIL) + (MTTSM
* ANNUAL OPERATING HRS / MTBSM / ANNUAL MAINT HRS AV
+ CREW MANYRS PER SYS + MAINT MANYRS PER SYS)
* WEIGHTED SUM OF REPLACE \$ * # OPERATING YRS +

OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.072 SERVICES

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

WEIGHT SUM OF REPLACE \$ =

OTHER =

EQUATION:

= ((MTTR * ANNUAL OPERATING HRS / MTBF
/ ANNUAL MAINT HRS AVAIL) + (MTTSM
* ANNUAL OPERATING HRS / MTBSM / ANNUAL MAINT HRS AV
+ CREW MANYRS PER SYS + MAINT MANYRS PER SYS)
* WEIGHTED SUM OF REPLACE \$ * # OPERATING YRS +

OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.081 CREW PAY & ALLOWANCE

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

WEIGHTED SUM BASE P&A =

OTHER =

EQUATION:

= WEIGHTED SUM BASE P&A

* CREW MANYEARS PER SYS * # OPERATING YRS

+ OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.082 MAINT PAY & ALLOWANCES

VARIABLES

-----	SUBSYSTEM (1)	SUBSYSTEM (2)	SUBSYSTEM (3)
THRUPUT =			
WEIGHTED SUM BASE P&A =			
OTHER =			

EQUATION:

= WEIGHTED SUM BASE P&A
* ((MTTR * ANNUAL OPERATING HRS / MTBF
/ ANNUAL MAINT HRS AVAIL) + (MTTSM
* ANNUAL OPERATING HRS / MTBSM / ANNUAL MAINT HRS AV
+ MAINT MANYRS PER SYS) * # OPERATING YRS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.083 SYS SPEC SUPT P&A

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATION:

5.083 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.084 TRAINEE/TRAINER P&A

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

WEIGHT SUM OF REPLACE \$ =

OTHER =

EQUATION:

= ((MTTR * ANNUAL OPERATING HRS / MTBF
/ ANNUAL MAINT HRS AVAIL) + (MTTSM
* ANNUAL OPERATING HRS / MTBSM / ANNUAL MAINT HRS AV
+ CREW MANYRS PER SYS + MAINT MANYRS PER SYS)
* WEIGHTED SUM OF REPLACE \$ * # OPERATING YRS +

OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.085 SYS/PROJ MGMT P&A

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

MANYEARS =

MANYEAR \$ =

OTHER =

EQUATION:

= MANYEARS * MANYEAR \$ * # OPERATING YRS
+ OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.086 PERM CHG OF STA (PCS)

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

WEIGHTED SUM OF PCS \$ =

OTHER =

EQUATION:

= ((MTTR * ANNUAL OPERATING HRS / MTBF
/ ANNUAL MAINT HRS AVAIL) + (MTTSM
* ANNUAL OPERATING HRS / MTBSM / ANNUAL MAINT HRS AV
+ MAINT MANYRS PER SYS + CREW MANYRS PER SYS)
* WEIGHTED SUM OF PCS \$ * # OPERATING YRS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.087 OTHER MPA FUND SUST

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATION:
5.087 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.09 SYS/PROJ MGMT (CIV)

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATION:
5.09 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.10 MODIFICATIONS/KITS

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATION:
5.10 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.11 OTHER SUSTAINMENT

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATION:
5.11 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.111 OTHER O&M FUND SUST

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

WEIGHTED SUM OF QMU \$ =

OTHER =

EQUATION:

= ((MTTR * ANNUAL OPERATING HRS / MTBF
/ ANNUAL MAINT HRS AVAIL) + (MTTSM
* ANNUAL OPERATING HRS / MTBSM / ANNUAL MAINT HRS AV
+ CREW MANYRS PER SYS + MAINT MANYRS PER SYS)
* WEIGHTED SUM OF QMU \$ * # OPERATING YRS + OTHER

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

VARIABLE INPUT SHEET

5.112 OTHER PROC FUND SUST

VARIABLES

SUBSYSTEM (1) SUBSYSTEM (2) SUBSYSTEM (3)

THRUPUT =

EQUATION:
5.112 = THRUPUT

DESCRIPTION OF HOW VALUES WERE DERIVED:

ASSUMPTIONS:

SOURCE:

END

10-86

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